

Hernández, L.P., C.H. Martin, P.C. Wainwright, D. Adriaens, B. Masschaele & M. Dierick (2010) - Scum sucking, scale snipping or snail scooping: Divergence in size and structure of cranial features within incipient species of Bahamian pupfish with different diets. Annual Meeting of the Society of Integrative and Comparative Biology (Seattle, USA). (poster presentation)

ABSTRACT:

Sympatric speciation has often resulted in significant morphological differentiation of trophic features. A young radiation of *Cyprinodon* species, characterized by distinct head and body shape, resides within hypersaline lakes in San Salvador, Bahamas. Not only are these incipient species morphologically distinct, our gut content analyses show they have distinct diets. These trophic morphs include a detritivore, a specialized scale feeder and a hard prey specialist. Moreover, another prospective morph shows a tendency towards a more piscivorous diet. Previous work describing cranial differences within these morphs examined only basic changes in head shape. To more carefully assess the specific morphological differences that characterize this Bahamian radiation we have dissected, cleared and stained, and micro-CT scanned individuals. The most significant differences were seen between the scale feeder and all other morphs. While some meristic characters (tooth number) underwent changes, much of the trophic divergence within this radiation was due to changes in continuous variables. While all morphs contained the same basic divisions of the adductor mandibulae (AM) complex, the relative size and connectivity among divisions varied substantially. Total mass of the AM in scale feeders was 4 times that of either detritivores or hard prey specialists. Overall, scale specialists showed the most divergent morphology, suggesting that divergent selection for scale-biting might be stronger or act on a greater number of traits than selection for either piscivory or durophagy.